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EXAMINER
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* FRANK RUI-FENG CHU, NOBORU KAMIJO,  
and DENNY DUAN-LEE TANG

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Appeal 2007-3970  
Application 09/768,829  
Technology Center 2600

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Decided: April 7, 2008

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Before KENNETH W. HAIRSTON, JOHN A. JEFFERY, and KEVIN F.  
TURNER, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-10 and 12-36. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

## STATEMENT OF THE CASE

Appellants invented a keyboard input device that occupies a relatively small area that is compatible with portable or handheld electronic devices. Specifically, the device includes a reduced set of character keys and character subsets that are chosen by the user during character entry. In one embodiment, the sets of characters are the characters in a selected row of a traditional QWERTY keyboard. The user can then select a desired row of a traditional keyboard merely by using control buttons. Other embodiments of the invention include a wristwatch and a portable phone with commensurate functionality.<sup>1</sup> Claim 1 is illustrative:

1. A reduced set character entry system for an electronic appliance, said reduced set character entry system comprising:

a first set of multiple keys, said first set of multiple keys representing a selected subset comprising a single row of characters from a set of QWERTY style keyboard rows, each of said keys associated with a character of said selected subset such that when any of said first set of multiple keys is actuated said associated character is input to said electronic appliance;

a second set of keys, at least one of said second set of keys actuated to change said selected row, and

an electronic appliance display, said display displaying the characters of said selected row.

The Examiner relies on the following prior art references to show unpatentability:

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<sup>1</sup> See generally Spec. 7:1-8:16.

Kaehler	US 5,128,672	Jul. 7, 1992
Wang	US 5,661,476	Aug. 26, 1997
Moon	US 5,812,117	Sep. 22, 1998
Acevedo	US 5,818,361	Oct. 6, 1998
Will	US 5,825,353	Oct. 20, 1998
Macor	US 5,841,849	Nov. 24, 1998
Abraham	US 5,841,374	Nov. 24, 1998
Lo	US 6,072,471	Jun. 6, 2000
Lu	EP 0 889 388 A1	Jan. 7, 1999

1. Claims 1, 2, and 6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wang.
2. Claim 30 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Lu.
3. Claim 3 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Wang and Acevedo.
4. Claims 4 and 5 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Wang and Abraham.
5. Claim 7 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Wang and Moon.
6. Claims 8, 9, 12, and 31-33 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Lu and Will.
7. Claims 10, 13, and 34 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Lu, Will, and Kaehler.<sup>2</sup>

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<sup>2</sup> Although the Examiner's rejection includes claim 11 (Ans. 4; Final Rej. 10-11), this claim has been cancelled.

8. Claim 14 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Lu, Will, and Wang.
9. Claims 15, 16, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Lu and Wang.
10. Claim 17 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Lu, Wang, and Kaehler.
11. Claims 20-29 and 35 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Macor and Lu.
12. Claim 36 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Lu, Kaehler, and Lo.

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Briefs and the Answer for their respective details. In this decision, we have considered only those arguments actually made by Appellants. Arguments which Appellants could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

## OPINION

### *The Anticipation Rejection Based on Wang*

We first consider the Examiner's anticipation rejection of claims 1, 2, and 6 over the disclosure of Wang. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional

limitations. *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984); *W.L. Gore and Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554 (Fed. Cir. 1983).

The Examiner has indicated how the claimed invention is deemed to be fully met by the disclosure of Wang (Final Rej. 2-3).<sup>3</sup> Appellants argue that Wang does not disclose:

- (1) a reduced character entry system as a single row of input characters chosen as a subset of a complete QWERTY style character set;
- (2) a keyboard in limited space; and
- (3) a set of keys to shift the case of the characters associated with the input character keys.

Regarding limitation (1) above, Appellants emphasize that Wang does not display a selected subset, but rather a complete set of characters (App. Br. 6-8; Reply Br. 3-6).

The Examiner responds that Wang's first set of multiple keys 102-7 through 102-11 shown in Figure 1b represent a selected subset, namely the letters that are highlighted in the display. The Examiner adds that actuating at least one of the second set of keys 102-1 through 102-6 changes the selected row (Ans. 5-6).

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<sup>3</sup> We note that the Examiner's Answer does not expressly state the Examiner's grounds of rejection, but instead refers us to a previous Office action (Ans. 3-5). Such incorporations by reference, however, are improper under current practice. *See* MPEP § 1207.02 ("An examiner's answer should not refer, either directly or indirectly, to any prior Office action without fully restating the point relied on in the answer.").

The issue before us, then, is whether Wang anticipates the limitations of claims 1, 2, and 6, specifically the disputed limitations (1) through (3) noted above. For the following reasons, we answer this question “yes.”

Wang discloses a keyboard for a personal information device. The keys of the keyboard are divided into two groups: (1) a horizontal group of keys (102-7 to 102-11), and (2) a vertical group of keys (102-1 to 102-6). Six rows of letters are displayed in display area 101a in (1) three horizontal sets (103a to 103c), and (2) five vertical sets (103d to 103h) with each set having two letters each. The two rows in each horizontal set are arranged such that, when merged, they yield a traditional “QWERTYUIOP” key arrangement (Wang, col. 3, ll. 20-40; Fig. 1a).

Specific letters are selected in a two-key sequence: (1) selecting one key from the vertical keys, and (2) selecting one key from the horizontal keys, or vice-versa (Wang, col. 3, ll. 41-59; Figs. 1a-1c).

Based on this functionality, we agree with the Examiner that Wang fully meets the recited disputed limitations noted above. First, we disagree with Appellants (Reply Br. 2-3) that Wang allegedly fails to disclose a reduced character entry system as claimed. Although the displayed characters in Figures 1a through 1c include the entire alphabet and four punctuation symbols (colon, single and double quotation marks, and caret), Wang’s device by no means displays all characters available on standard QWERTY keyboards. Significantly, Wang’s display lacks common punctuation marks available on such keyboards including, among other things, periods, semicolons, parentheses, brackets, question marks, etc.

Moreover, the display lacks any numbers which are also common on such keyboards. Therefore, for this reason alone, Wang's system fully meets a reduced set character entry system as claimed.

Furthermore, we find that the selected row in Figure 1b of Wang fully meets the recited "selected subset comprising a single row of characters from a set of QWERTY style keyboard rows." When this row is selected by pressing key 102-5, any further selections via the horizontal keys (102-7 to 102-11) are confined to this selected row. Thus, selecting a row, in effect, reduces the number of characters that are capable of entry.

We also agree with the Examiner that the horizontal keys (102-7 to 102-11) reasonably correspond to the recited "first set of multiple keys," and the vertical keys correspond to the "second set of keys." Although the vertical keys are pressed *first* to select (or change) a row prior to pressing a horizontal key to select a character from the selected row as shown in Figure 1b, nothing in claim 1 requires actuating the second set of keys *after* actuating the first set of keys. Rather, all the claim requires is that at least one of the second set of keys be actuated to change the selected row -- a feature fully met by the vertical keys in Wang.

Furthermore, the horizontal keys (102-7 to 102-11) fully meet the "first set of multiple keys" as claimed. When a row (i.e., a subset) is selected by a vertical key, the horizontal keys then *collectively* "represent" this selected subset. That is, for this selected subset, key 102-11 (key "1") represents the letters in column set 103d (letters "A" and "S"), key 102-10 (key "2") represents the letters in column set 103e (letters "D" and "F"), etc.



Therefore, not only do the horizontal keys collectively represent the selected subset, each horizontal key is associated with a particular character of this subset such that actuating a particular key selects (and therefore enters) this associated character. *See Wang*, col. 3, ll. 44-53 (describing selecting letter “D” by first pressing vertical key 102-5 to select row, and then pressing horizontal key 102-10).

For the foregoing reasons, independent claim 1 is fully met by Wang. We will therefore sustain the Examiner’s anticipation rejection of that claim. We will also sustain the Examiner’s rejection of claim 2 which was not separately argued and therefore falls with claim 1. *See In re Nielson*, 816 F.2d 1567, 1572 (Fed. Cir. 1987); *see also* 37 C.F.R. § 41.37(c)(1)(vii).

We will also sustain the Examiner’s rejection of claim 6. We agree with the Examiner (Final Rej. 3) that this claim is likewise fully met by Wang’s teaching (col. 3, ll. 65-67) of using an additional key of the vertical group (i.e., the “second set of keys”) as a “<shift/change case>” key.

#### *The Anticipation Rejection Based on Lu*

We now consider the Examiner’s anticipation rejection of claim 30 over the disclosure of Lu (Final Rej. 3-4). Appellants argue that the displayed character subsets in Lu are merely sequences of the alphabet, not keyboard style rows. Appellants further argue that the claimed invention uses an *additional key* as the selection key for changes between subsets, but Lu uses the same keys as both input and selection keys. In any event,

Appellants argue, Lu does not locate such keys on a side surface as claimed (App. Br. 9-10; Reply Br. 6-7).

The Examiner responds that the displayed subsets in Lu are derived from normal keyboard symbols contained in rows of Tables 2 and 4 of Figure 1. The Examiner also takes the position that a personal digital assistant (PDA) or a pager inherently includes top, bottom, and connecting side surfaces. The Examiner further notes that claim 30 does not distinguish these respective surfaces. As such, the Examiner contends, nothing in the claim precludes considering the short and thin faces of a PDA or pager as “top” and “bottom” respectively, and construing the remaining faces as the “sides.” With this interpretation, the Examiner indicates that the keys shown in the figures of Lu can be considered as being on the side surfaces of the device (Ans. 6-7).

The issues before us, then, are (1) whether the input characters in Lu comprise a row from a set of keyboard rows, and (2) whether the input and selection keys in Lu are located on any of the side surfaces as claimed. For the following reasons, we answer “yes” to both of these questions.

Lu discloses a user interface for facilitating entry to a handheld computer device such as a PDA. Initially, only a subset of characters (i.e., the “index characters”) of a character set or alphabet is displayed on a touch sensor display of the device. *See, e.g.*, Lu, Fig. 2. Respective subsets of the remaining characters are associated with the displayed characters. The user, having a particular character in mind to enter, selects the displayed character associated with the subset containing the displayed character. That subset is

then displayed, and the user selects the desired character (Lu, Abstract; col. 6, ll. 1-19; Figs. 3 and 4).

Preferably, the characters are divided into contiguous subsets (e.g., in terms of their order in the alphabet) as shown in the tables of Figure 1. With this approach, the first letter of the subset is the index character (Lu, col. 5, ll. 9-19 and 38-48).

We find this functionality fully meets claim 30. At the outset, we note that unlike claim 1, claim 30 does not recite characters from QWERTY-style keyboard rows, but merely recites that the input characters comprise “a row from a set of keyboard rows.” Such a broad recitation, in our view, does not preclude the rows of characters in the tables of Figure 1 -- rows that Lu expressly states correspond to subsets of characters (Lu, col. 6, ll. 1-8). Moreover, these tabulated characters are referred to as “keyboard symbols” (Lu, col. 5, ll. 11-14). Therefore, these characters fully meet a set of input characters comprising a row from a set of keyboard rows as claimed.

While the same touch-screen keys function as both index character selection keys as well as input keys as shown in Figures 3 and 4, nothing in the claim precludes such dual-purpose keys. In Figure 3, only the index characters are displayed; therefore, the keys in this mode function as “selection keys.” In Figure 4, however, only the subset of input characters corresponding to the selected index key is displayed; therefore, the keys in this mode function as “input keys.” In effect, selecting an index character as in Figure 3 transforms the selection keys to input keys whose functionality is

independent and distinct from the selection keys. Nothing in the claim precludes such functionality.

That the input and selection keys in Lu are located on the same surface is not dispositive as the claim merely requires locating the input and selection keys on *any* of the side surfaces, respectively. That is, this limitation is fully met by locating the keys on the *same* side surface.

Although the PDA's display (and keys) in Lu are clearly shown in the figures on the front of the PDA, the pivotal question is whether this surface can be reasonably considered a "side" surface. The Examiner's point in this regard is well-taken: characterizing top, bottom, and side surfaces of a structure such as a PDA is merely a matter of perspective. And lacking any further structural limitations in the claim that would distinguish these surfaces from one another (apart from the side surfaces connecting the top and bottom surfaces), we find the Examiner's construing the surface of the PDA with the keys as the side surface reasonable, at least with respect to the perspective when the device is viewed from the side.<sup>4</sup>

For the foregoing reasons, we find all limitations of claim 30 fully met by Lu. Accordingly, we will sustain the Examiner's anticipation rejection of that claim.

#### *The Obviousness Rejections*

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<sup>4</sup> From that perspective, the side surface (as shown in the perspective of the figures of Lu) then becomes the front surface, and the front and rear surfaces become the side surfaces which connect the top and bottom surfaces, respectively.

*Claim 3*

We now consider the Examiner's obviousness rejection of claim 3 over the disclosures of Wang and Acevedo. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Discussing the question of obviousness of a patent that claims a combination of known elements, the Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740 (2007) explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [v. *AG Pro, Inc.*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

*KSR*, 127 S. Ct. at 1740. If the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art

ready for the improvement, a holding of obviousness can be based on a showing that “there was an apparent reason to combine the known elements in the fashion claimed.” *Id.* at 1740-41. Such a showing requires “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 1741 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

If the Examiner’s burden is met, the burden then shifts to the Appellants to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

The Examiner's rejection cites Acevedo for teaching providing each key of a set of keys with an electronic character display and input mechanism as claimed, and concludes that combining such a feature with Wang would have been obvious to one of ordinary skill in the art at the time of the invention (Final Rej. 4-5; Ans. 7-8).

Appellants argue that Acevedo is simply a conventional keyboard and the reference does not teach or suggest a compact, reduced character keyboard with a single row of characters (App. Br. 10-11; Reply Br. 7-8).

We will sustain the Examiner’s rejection. While Acevedo’s display keys 12 are mounted on a conventional keyboard, we see no reason why

skilled artisans could not apply such teachings to a set of keys on a reduced size device such as that shown by Wang. Acevedo indicates that the display keys have LCD or LED displays for depicting, among other things, alphanumeric characters, symbols, special characters, etc. (Acevedo, col. 4, ll. 1-7).

In our view, such a display would only enhance the functionality of Wang's keys, particularly since the keys themselves are labelled with numbers. *See, e.g.*, Wang, Fig. 1b. As the Examiner indicates (Ans. 8), such a functionality in Wang would, at a minimum, more readily inform the user which key produces which letter. Furthermore, adding the recited character display to Wang's device, in our view, is tantamount to the predictable use of prior art elements according to their established functions -- an obvious improvement. *See KSR*, 127 S. Ct. at 1740.

Therefore, we find that the Examiner's combination of references is proper, and all limitations of claim 3 are reasonably suggested by the collective teachings of the cited references. The Examiner's rejection is therefore sustained.

*Claims 4 and 5*

Regarding claims 4 and 5, the Examiner adds the disclosure of Abraham to Wang for teaching providing a first set of keys on a top surface and a second set of keys on a side surface (Final Rej. 5-6). Appellants argue that Abraham does not provide a reduced entry character set, the recited subset of characters, nor does Abraham disclose a method of changing the character set. Appellants emphasize that while thumb keys are provided on the side of the device in Abraham, they do not provide the same control functions as the claimed invention (App. Br. 11-12).

We will sustain the Examiner's rejection. Abraham discloses in one embodiment a computer keyboard 10 with two hinged keypads 12a, 12b comprising (1) keys 16 on the top surface, and (2) thumb keys 20 on the side surface 22 (Abraham, col. 3, ll. 1-22; Figs. 1, 2). Other embodiments provide a similar structure, but without the hinge (Abraham, col. 4, ll. 44-48; Figs. 14 and 15).

Based on this functionality, we agree with the Examiner (Final Rej. 6) that skilled artisans could have readily modified Wang's reduced character entry system to provide keys on the side surface of the device as suggested by Abraham to, among other things, facilitate ergonomic data entry via the thumbs. Appellants' arguments directed to the alleged shortcomings of Abraham noted above are unavailing, and, in any event, are not germane to the reason why the Examiner cited the reference. Rather, the Examiner relied on Wang for those disputed limitations. And to the extent these arguments are directed to the disclosure of Wang, we find Wang amply



discloses a reduced set character entry system for the reasons previously discussed.

Based on the collective teachings of Wang and Abraham, we find that these references amply suggest all limitations of claims 4 and 5. Moreover, adding keys to the side surface of Wang in the manner suggested by Abraham, in our view, is tantamount to the predictable use of prior art elements according to their established functions -- an obvious improvement. *See KSR*, 127 S. Ct. at 1740.

#### *Claim 7*

Regarding claim 7, the Examiner adds the disclosure of Moon to Wang for teaching two keys that change the selected row up or down, respectively (Final Rej. 7-8). Appellants argue that combining Moon with Wang does not cure the previously-noted deficiencies with respect to the limitations of claim 1, namely with respect to a single row of characters that are a subset of a complete QWERTY set (App. Br. 12-13).

We will sustain the Examiner's rejection. First, our previous discussion with respect to Wang applies equally here and we incorporate that discussion by reference. Furthermore, as the Examiner indicates, Wang itself strongly suggests the functionality of the recited two keys in view of the unlabeled arrow keys located in the lower right corner of the device. *See, e.g.*, Wang, Figs. 1a-1c. We also find that skilled artisans could have readily provided scroll keys, such as those shown in Figure 2B of Moon and described in column 3, lines 13 through 15 and 32 through 34, in Wang's

device to change rows as claimed. Such an improvement, in our view, is tantamount to the predictable use of prior art elements according to their established functions. *See KSR*, 127 S. Ct. at 1740.

*The Obviousness Rejection Over Lu and Will*

We now consider the Examiner's obviousness rejection of claims 8, 9, 12, and 31-33 over Lu and Will. Regarding claims 8, 9, and 12, the Examiner finds that Lu discloses every recited feature except that the selection key is located on a side surface, and cites Will for such a feature. The Examiner concludes that the claims would have therefore been obvious in view of the collective teachings of the references (Final Rej. 8-9).

Regarding representative claim 8,<sup>5</sup> Appellants argue that Will's thumbwheel does not change between sets of a single row of input keys. Appellants add that since Lu's input and selection keys are the same keys, they cannot be located on different surfaces as claimed, nor does Lu invite the use of an additional key on a side surface (App. Br. 13-14).

We will sustain the Examiner's rejection of representative claim 8. Will in Figure 1 discloses a PDA with a thumbwheel 3 located on a side surface. The thumbwheel can also function as a selector button (Will, col. 4, ll. 44 - col. 5, l. 10; col. 6, ll. 40-64; Figs. 1, 4a, 4b). In another embodiment, Will discloses a miniature cellular telephone with a similarly

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<sup>5</sup> Appellants argue claims 8, 9, and 12 together as a group. Accordingly, we select claim 8 as representative of this grouping. *See* 37 C.F.R. § 41.37(c)(1)(vii).

situated thumbwheel 183 and a display of keys to facilitate dialing (Will, col. 12, ll. 51-64; Figs. 11a, 11b).

While Appellants are correct that Lu's input and selection keys on the front of the device are the same keys, we nonetheless agree with the Examiner that skilled artisans could have provided at least one selection key on the side of the device in view of the teachings of Will. Such a functionality would, among other things, enable the user to quickly and easily select a desired subset merely by pressing a button using the fingers or thumb in lieu of contacting a limited area on the touch screen (e.g., with a stylus) for such a selection. Such an improvement, in our view, is not only suggested by the prior art, it is also tantamount to the predictable use of prior art elements according to their established functions.

For the foregoing reasons, we will sustain the Examiner's rejection of representative claim 8 and claims 9 and 12 which fall with claim 8. We will also sustain the Examiner's rejection of claim 31 as we find Will amply teaches a portable phone as noted above.

#### *Claims 32 and 33*

We will not, however, sustain the Examiner's rejection of claims 32 and 33. We simply fail to see any reasonable teaching or suggestion in Lu or Will for locating input keys and selection keys on *different side surfaces*, respectively. In Lu, the input and selection keys are located on the front surface as viewed from the perspective shown in the drawings. And in Will, the input keys are located on the front surface and the selection key on the

side surface. The Examiner's findings pertaining to claims 32 and 33 (Final Rej. 10) are unavailing.

Furthermore, to suggest that the input keys of Lu or Will could somehow be moved from the front surface to the side surface that is different from the side surface where the selection key(s) are located simply strains reasonable limits and, in our view, is tantamount to hindsight reconstruction of the invention.<sup>6</sup>

For the foregoing reasons, we will not sustain the Examiner's rejection of claims 32 and 33.

*The Obviousness Rejection Over Lu, Will, and Kaehler*

Regarding claims 10, 13, and 34, the Examiner adds the disclosure of Kaehler to teach (1) plural displays (claim 10); (2) providing a control key on a side surface to switch the case of displayed characters (claim 13); and (3) providing a second shift button on the opposite side from a first shift button, control button, and options button (claim 34) (Final Rej. 10-12).

*Claim 10*

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<sup>6</sup> Even if we were to view the front surface of Lu as the side surface using the perspective noted with respect to the anticipation rejection of claim 30, meeting the recited limitations of claims 32 and 33 would require locating the input or selection keys on the *rear* of the device (i.e., its other "side"). Such a modification, in our view, is hardly suggested by the prior art of record.

Regarding claim 10, Appellants do not dispute the Examiner's findings with respect to Kaehler regarding the plural displays (findings which we find reasonable), but reiterate their arguments with respect to claims 8 and 9 (App. Br. 15). But since we do not find those arguments persuasive for the reasons previously discussed, Appellants have not persuasively rebutted the Examiner's prima facie case of obviousness for claim 10. Therefore, we will sustain the Examiner's rejection of that claim.

*Claim 13*

Regarding claim 13, Appellants reiterate their arguments with respect to claim 8, but add that Kaehler fails to disclose a control key on a side of the device for shifting the case of the input keys (App. Br. 15).

We will sustain the Examiner's rejection of claim 13. Kaehler discloses a handheld display device with shift buttons 18 on either side of the housing (Kaehler, col. 4, ll. 4-15; Figs. 1, 3A-3L). Selecting a shift key causes the character set layout to change from upper to lower case versions and vice-versa (Kaehler, col. 9, l. 63 - col. 10, l. 18).

Based on this functionality, skilled artisans would have ample suggestion to provide a commensurate button (i.e., a control key) on the side surface in the Lu/Will device to change the case of displayed characters associated with the input keys. Such an improvement, in our view, is not only suggested by the prior art, it is also tantamount to the predictable use of prior art elements according to their established functions. The rejection of claim 13 is therefore sustained.

*Claim 34*

We will not, however, sustain the Examiner's rejection of claim 34. Although the citation of Kaehler for the limitations of this claim makes this a closer question, we nonetheless disagree with the Examiner (Final Rej. 12) that such limitations would have been obvious.

To be sure, Kaehler provides shift buttons 18 on opposite sides of the housing as shown in Figure 1. But the keys that most reasonably correspond to the recited *input keys* (i.e., the character set) are located on the *front* of the device -- not the side. Therefore, there is no reasonable teaching, in our view, to locate the input keys to the side opposite the recited selection key(s) apart from Appellants' own disclosure. To do so would require us to resort to hindsight reconstruction of the invention. That we will not do. Accordingly, we cannot sustain the Examiner's rejection of claim 34.

*Claims 14-19*

Regarding the Examiner's obviousness rejections of (1) claim 14 over Lu, Will, and Wang; (2) claims 15, 16, 18, and 19 over Lu and Wang; and (3) claim 17 over Lu, Wang, and Kaehler (Final Rej. 12-15), Appellants reiterate their arguments that the additional references cited by the Examiner do not cure the previously-noted deficiencies with respect to the recited subsets, QWERTY style keyboard input character set, and input keys on the side surface of the device (App. Br. 16-17).

At the outset, our previous discussion pertaining to the respective disclosures of Lu, Will, Wang, and Kaehler applies equally here and we incorporate that discussion by reference. We are therefore not persuaded by Appellants' arguments as they pertain to commensurate limitations in claims 14-19 for the reasons previously discussed.

Regarding claim 17, we add that Appellants' argument regarding Kaehler's not disclosing the placement of *input character keys* on the side surface of the device (App. Br. 17) is not commensurate with the scope and breadth of the claim. Specifically, the claim recites that "*one* or more of said character keys *and* selection keys are disposed on one or more of said side surfaces" (emphasis added). The scope of this limitation does not preclude disposing on a side surface at least one key of the group consisting of (1) character keys, and (2) selection keys. That is, so long as *one* key of the group is disposed on a side surface (i.e., a character input key *or* a selection key), the limitation is met. Since the prior art teaches disposing selection keys on the side surfaces as discussed previously, the limitation is therefore fully met.

For the foregoing reasons, we find Appellants have not persuasively rebutted the Examiner's prima facie case of obviousness for claims 14-19. Accordingly, we will sustain the Examiner's rejections of those claims.

#### *The Obviousness Rejection Over Macor and Lu*

We now consider the Examiner's obviousness rejection of claims 20-29 and 35 over Macor and Lu. The Examiner's rejection finds that Macor

discloses an electronic appliance in the form of a watch or portable phone with every claimed feature except for (1) the display showing a selected set of input characters, and (2) the flexible assembly having a set of character keys thereon. The Examiner cites Lu for teaching these features and concludes that the recited limitations would have therefore been obvious over the collective teachings of the references (Final Rej. 16-20).

Appellants argue, among other things, that the input characters in Macor are displayed as a complete set, not a subset. Appellants add that since Macor uses a trackball to choose a selected key, the reference teaches away from the single row of characters of the present invention (App. Br. 18).

*Claims 20 and 22*

We will sustain the Examiner's rejection of independent claim 20. Macor discloses in one embodiment a wearable device 103 with a base member 104 which, in our view, is securable to a wrist of a user via appendages 100 and 102. The base member comprises a hinged door 108 with an information display 126 which the Examiner characterizes as the "flexible assembly." The base member comprises a function display 130 and a depressable trackball 116 which can maneuver a location indicator 132 displayed on the function display. To activate a virtual function key or button displayed on the function display, the user depresses the trackball (Macor, col. 3, ll. 31-64; Figs. 2, 3, 5, 7, 9, and 11).



Although Macor lacks the recited display features identified by the Examiner, we agree with the Examiner that these features would have been obvious to ordinarily skilled artisans in view of Lu. First, our previous discussion with respect to the disclosure of Lu applies equally here and we incorporate that discussion by reference. Further, even if Macor displays an entire set of characters as Appellants argue, we nonetheless agree with the Examiner (Final Rej. 16-17) that combining the reduced character entry system of Lu with Macor's wrist mounted device would have been an obvious improvement. Moreover, we see no reason why skilled artisans could not have provided a set of character keys on the display of the flexible assembly in light of the teachings of Lu. Such an improvement, in our view, is not only suggested by the prior art, it is also tantamount to the predictable use of prior art elements according to their established functions.

Appellants' argument that Macor's trackball teaches away from the claimed invention is unavailing. Macor indicates in connection with the embodiment of Figure 1 that when the trackball is depressed, the user can then activate a selected displayed virtual function key or button (Macor, col. 2, ll. 63-67). This teaching, considered with the fact that Lu envisions a variety of user input techniques including input via a *mouse* (Lu, col. 16, ll. 12-16), hardly teaches away from combining the references' teachings to arrive at the claimed invention.

For the foregoing reasons, we will sustain the Examiner's rejection of claim 20. Since Appellants have not separately argued the patentability of

dependent claim 22, it falls with claim 20. *See Nielson*, 816 F.2d at 1572; *see also* 37 C.F.R. § 41.37(c)(1)(vii).

#### *Claim 21*

We will not, however, sustain the Examiner's rejection of claim 21. While the door 108 in Macor pivots, we fail to see how it pivots from a position *substantially along and underneath the wristband* to a position perpendicular to the wristband, as claimed. The Examiner's reference to Figures 2 and 3 (Final Rej. 17) is unavailing as these figures merely show the door pivoting from the base member -- not underneath the wristband. Therefore, we cannot sustain the Examiner's rejection of claim 21.

#### *Claims 23-25*

Regarding claim 23 (reciting a portable phone), Appellants reiterate their arguments pertaining to Macor's displaying a complete set of characters, not a subset. Appellants add that Macor has a complete set of input characters on the main screen, not the flexible assembly (App. Br. 19).

However, we are not persuaded by these arguments essentially for the reasons we noted previously in connection with claim 20. In an alternative embodiment, Macor discloses a portable phone with commensurate display functionality with a despressable trackball similar to the previously-described embodiment. *See* Macor, col. 2, l. 45 - col. 3, l. 31; Figs. 1, 4, 6, 8, and 10. As we indicated above in connection with claim 20, combining the reduced character entry system of Lu with Macor's portable phone

device would have been an obvious improvement. Moreover, we see no reason why skilled artisans could not have provided a set of character keys on the display of the flexible assembly in light of the teachings of Lu -- an improvement tantamount to the predictable use of prior art elements according to their established functions.

For the foregoing reasons, we will sustain the Examiner's rejection of independent claim 23. Since Appellants have not separately argued the patentability of dependent claims 24 and 25, these claims fall with claim 23.

#### *Claim 26*

We will not, however, sustain the Examiner's rejection of claim 26. We agree with Appellants (App. Br. 19) that Macor simply does not teach or suggest that the input assembly is *externally* attachable to the portable phone, as claimed. The Examiner's cursory reference to the cited passages and figures of Macor (Final Rej. 19) as allegedly teaching this feature is unavailing. To the extent that the Examiner is relying on the hinged structure of Macor, such a pivotal attachment is not an *external* attachment, but rather an integral attachment that is part of the phone itself. For this reason alone, the Examiner's rejection of claim 26 cannot be sustained.

#### *Claims 27-29*

Since claims 27-29 recite commensurate limitations to those previously discussed, we will also sustain the Examiner's rejection of those

claims essentially for the reasons previously discussed in connection with claims 20 and 22-25.

*Claim 35*

Nor will we sustain the Examiner's rejection of claim 35. While the Examiner is correct regarding Macor's capability of rotating the displayed information (Final Rej. 21), the claim requires (1) locating the display on the *top* surface, and (2) locating the input keys on a *side* surface (recited in claim 30 from which claim 35 depends). From any perspective in which the Macor/Lu device can be viewed, however, we do not see how such limitations are met by the respective orientations in the cited references. Nor do we find any reasonable teaching or suggestion on this record for such an orientation of the display with respect to the input keys. Accordingly, we cannot sustain the Examiner's rejection of claim 35.

*Claim 36*

We will also not sustain the Examiner's rejection of claim 36. Although the Examiner adds the disclosures of Kaehler and Lo (Final Rej. 21-22), we do not agree that the prior art reasonably teaches or suggests providing an equal number of input keys and selection keys on different side surfaces, as claimed.

As we acknowledged previously in connection with claim 34, Kaehler's shift buttons 18 are on opposite sides of the housing as shown in Figure 1. But the keys that most reasonably correspond to the recited *input*

*keys* (i.e., the character set) are located on the *front* of the device -- not the side. Therefore, there is no reasonable teaching, in our view, to locate the input keys to a different side from the selection keys apart from Appellants' own disclosure. Nor do the disclosures to Macor or Lo cure this deficiency.

Therefore, we cannot sustain the Examiner's rejection of claim 36 for this reason alone.

#### DECISION

We have sustained the Examiner's rejections with respect to claims 1-10, 12-20, 22-25, and 27-31. We have not, however, sustained the Examiner's rejections with respect to claims 21, 26, and 32-36. Therefore, the Examiner's decision rejecting claims 1-10 and 12-36 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

#### AFFIRMED-IN-PART

KIS

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